

Laddered Bond Strategies: Should Investors Worry About Rising Interest Rates?



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Snapshot

- › Many fixed-income investors are concerned about the risk of rising interest rates and falling bond prices.
- › Interest-rate risk is relevant to most active fixed-income strategies; however, laddered bond strategies are specifically designed to manage the risk of both rising and falling rates.
- › As a result, these low-turnover investment strategies should not depend too heavily on an investor's interest-rate outlook.

Many investors look to laddered bond strategies in order to generate predictable streams of income. Laddered bond strategies purchase multiple bonds across a wide array of evenly spaced maturities in an effort to reduce interest-rate risk. Each bond is typically held until maturity at which time the proceeds are used to extend the bond ladder by purchasing a new bond at the far end of the desired maturity range. The prospect of rising interest rates makes investors nervous because the issuance of newer bonds offering higher rates of interest causes the prices of existing bonds to fall to a level where their stated coupon payments (the interest payments scheduled to be made prior to maturity) offer similar yields. For investors holding older bonds, this means that they will see the value of their bonds fall.

With the Federal Reserve (Fed) simultaneously hiking short-term interest rates and prepping the market for an eventual winding down of its asset purchase program, many fixed-income investors are asking, "What is my risk if and when interest rates begin to rise?" The question is straightforward, but unfortunately, the answer requires some complex mathematics and is often misunderstood. Clarification and understanding begin by defining the exact meaning of the word "risk" as it applies to a low-turnover investor's situation.

Risk

In this context, risk can be defined as the price sensitivity of a bond to changes in market interest rates. As previously noted, rising interest rates result in declining prices for existing bonds. Using this understanding of the word "risk," we can now evaluate the use of maturity and duration statistics in determining the price movement of bonds and bond portfolios.

Maturity

Maturity is simply a time frame. Maturity tells investors the precise length of time until the borrower will repay the loan (also known as the bond's maturity date). For example, a bond with 10 years remaining until maturity will return the full principal value of the loan to the investor 10 years from today, assuming no default. On a standalone basis though, maturity doesn't tell us much about interest-rate risk. For instance, assuming there is no default, the principal will be paid back to the investor in 10 years regardless of whether interest rates remain unchanged, rise or fall significantly over that time period.

Duration

Explaining the concept of duration is a daunting task, as the mathematics underlying its calculation are complicated enough to scare off anyone who is not in the business of professional fixed-income management (or a dedicated fan of calculus). Therefore, we will skip the formulas and get right to the interpretation.

Duration is a measure of a bond's price sensitivity to a given change in interest rates, specifically a 1% move in the entire term structure of interest rates. For our purposes, we can say that the term structure of interest rates is reasonably approximated by the U.S. Treasury yield curve. Exhibit 1 depicts a 1% parallel upward shift across the Treasury yield curve.

Exhibit 1: A 1% Parallel Shift Up in U.S. Treasury Yields



For illustrative purposes only

As an example, a bond with 10 years to maturity and an interest rate of 2.5% that is priced at par (normally \$1,000, or \$100 in bond parlance) also has a yield-to-maturity equal to 2.5%. Skipping the complex duration calculation and moving straight to the result, the duration of this bond is 9.01. This tells us that if the U.S. Treasury yield curve were to shift upwards in parallel fashion (meaning all maturity points on the yield curve increase equally) by 1%, the market price of this particular bond is expected to decrease by 9.01%. To that point, the interpretation of a bond's duration is simply, that given a 1% shift in interest rates, the value of this bond will increase (if rates fall) or decrease (if rates rise) by the duration figure percent. Duration is also directly scalable, meaning that if the yield curve shifts upward by 2%, the bond's price would decrease by approximately two times 9.01%, or 18.02%.

Maturity and Duration

For all coupon paying bonds, duration will be less than years to maturity. There are three primary factors that determine duration:

- 1 Time to maturity
- 2 Coupon rate
- 3 The yield on the bond

The first factor, maturity, is positively related to duration; all else equal, the longer the maturity of the bond, the greater the duration, because the values of a larger number of interim cash flows (coupon payments) are affected by the change in interest rates. The second and third factors are inversely related to duration (all else being equal, the higher a bond's coupon rate or the higher its yield, the lower the duration).

Clearly, maturity is just one piece of the equation in estimating the risk of fixed-income investing with regard to changing interest rates. If maturity is used on a standalone basis, it tells very little about risk and it can be misleading under certain circumstances. Duration is a very helpful measure for estimating risk as it incorporates the effect of coupon payments and gives a reference point for an evaluation of price performance under various expectations for future interest rates.

Putting the Pieces Together in the Context of Bond Ladders

To provide an illustrative historic context relative to laddered bond strategies, we can reference the past performance of three Bank of America Indexes, which serve as reasonable proxies for the performance of comparable maturity taxable bond ladders:

- US Government Index, 1-3 year: duration = 1.87
- US Government Index, 1-5 year: duration = 2.67
- US Government Index, 1-10 year: duration = 3.77

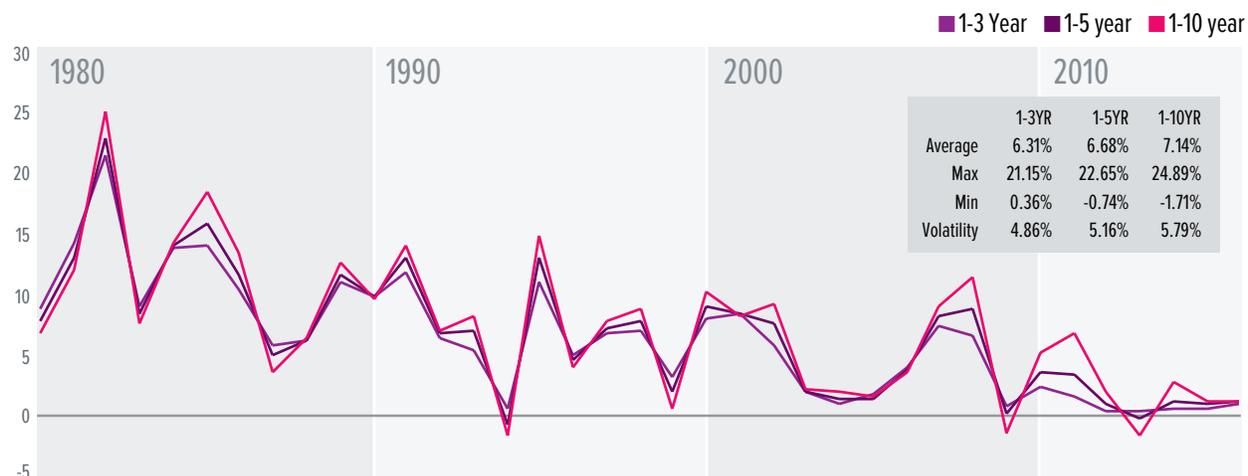
Source: Bank of America

As of 7/31/2017, for illustrative purposes only.

Notice that the durations are much shorter than the final maturity dates for these indices. Most notable is the 1-10 year Index, which has a duration that is only about 40% of its longest-dated maturity of 10 years.

For our analysis we evaluated the annual total return (price return + coupon return) of these three indices from 1979 to 2016. This period is sufficiently long to capture the various stages of both business and interest-rate cycles. Exhibit 2 summarizes these results.

Exhibit 2: Total Return of Bank of America U.S. Government Indexes



Sources: Bank of America, SEI

Annual performance from 12/31/1980 to 12/31/2016. Index returns are for illustrative purposes only and do not represent actual fund performance. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. Past performance does not guarantee future results.

Looking at the chart and table provides interesting insight about historical performance. Most notably, there were only three years during this time period in which any of the three indices generated negative total returns (1994, 2009 and 2013). It's important to note that, although an account statement would show a decline in market value for a similar portfolio in those years, a negative total return would only have been realized if the securities were sold at that time instead of being held to maturity—in other words, if the laddering strategy were abandoned. In fact, as can be seen in the chart, the subsequent year in both cases showed strong bond market performance.

Conclusions

Now that we have a better understanding of what interest-rate risk is, how to measure it and a historical context from which to view it, we can look at it in relation to laddered bond strategies. Two main themes emerge.

First and foremost, it is important to note that duration and interest-rate risk management are better suited for active strategies and should be of less concern for buy-and-hold investors, for the following reasons:

- › In a buy-and-hold strategy, any changes in the value of the portfolio due to shifting interest rates will be unrealized (paper losses), if the investor holds the bonds to maturity. Assuming no risk of default, as bonds approach maturity, their prices will converge to par value. This will happen regardless of interest-rate shifts.
- › Coupon payments and bond maturity proceeds that are kept in the portfolio will be reinvested in the longest maturities at the back end of the ladder where they will begin to capture the yield advantage created by higher interest rates.

Secondly, although it is true that a rise in interest rates would lead to a decline in the market price of most existing bonds, waiting for a move higher in interest rates to get a better entry point has its own set of costs, most importantly that of foregone coupon payments while sitting in cash waiting. In addition, we are often asked questions along the lines of, “I ultimately would like a 0-10 year ladder, but should I go into a 0-3 year and wait for interest rates to move higher?” Our answer to this question is that speculating on the timing of future interest rate increases is of little value for buy-and-hold portfolios. To more formally answer this question, we must again stress that any price moves due to shifting interest rates will only be locked in if the bonds are sold. An investor will likely be much better served in the long run by investing according to their circumstances—in this example, by going into a 0-10 year ladder—for the following reasons:

- › The 0-10 year ladder will provide a higher yield than the 0-3 year ladder (assuming a normal, positively-sloped yield curve).
- › Although the 0-10 year ladder will show greater price volatility if rates rise, it will be an unrealized price loss as long as the securities are held to maturity.
- › With the 0-10 year portfolio, maturity proceeds will be reinvested further out in the interest-rate term structure, which will enhance yield if interest rates rise.
- › If the investor is correct and rates do rise in their time frame, transitioning from a 0-3 year ladder to a 0-10 year ladder would require selling a significant portion of the original portfolio, thus taking what would have been an unrealized loss (assuming a parallel or nearly parallel upward shift in interest rates) and making it an actual realized loss.

Therefore, it is our view that interest-rate risk in general should be less of a concern for the low-turnover investor, and ladder length should be primarily a function of an investor’s time horizon, liquidity needs and risk tolerance.

Index Definitions

The BofA Merrill Lynch 1-3 Year U.S. Treasury Index is an unmanaged index that tracks the performance of the direct sovereign debt of the U.S. Government having a maturity of at least one year and less than three years. It is not possible to invest directly in an unmanaged index.

The BofA Merrill Lynch 1-5 Year U.S. Treasury Index is an unmanaged index that tracks the performance of the direct sovereign debt of the U.S. Government with maturities between one and five years. It is not possible to invest directly in an unmanaged index.

The BofA Merrill Lynch 1-10 Year U.S. Treasury Index is an unmanaged index that tracks the performance of the direct sovereign debt of the U.S. Government with maturities between one and 10 years. It is not possible to invest directly in an unmanaged index.

Important Information

This material represents an assessment of the market environment at a specific point in time and is not intended to be a forecast of future events, or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice. This information is for educational purposes only.

There are risks involved with investing, including loss of principal. Diversification may not protect against market risk. There is no assurance the goals of the strategies discussed will be met. Bonds and bond funds will decrease in value as interest rates rise.

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